changes they have undergone during their short existence have not been so extended lately as in previous years. The third class of veiled spots, which differ from the two other classes in being confined to the spot zones, in their duration extending sometimes to several days, and in their close resemblance to minute patches of penumbra, have been observed this year rather less often than in 1883 and 1884. These faint objects have been examined both on the projected image and directly by aid of a solar prism and a Dawes eyepiece, and it is invariably found not only that the observation is far more easy, but more perfect in every way when the Sun is viewed by projection.

On October 28, at $9^h\ 5^m$, a few faculæ attached to a group of faint spots became on a sudden intensely bright, and faded again as quickly as they had shone out.* During this appearance no other change of any importance occurred in the spots themselves or in their neighbourhood. Within three minutes both the faculæ and the spots had entirely disappeared. I may mention in conclusion that, although there have been this year many days without true spots, the Sun's surface has but rarely been entirely free from faculæ, which, however, were sometimes very faint.

Nebula in Andromeda and Nova, 1885. By T. W. Backhouse.

I. Magnitude of Nova.

The few observations I took of *Nova*, 1885, quite confirm the remark of Dr. Copeland in his paper in *Monthly Notices*, xlvii. p. 55, that lower powers showed it brighter than higher ones. The comparison stars and their magnitudes, as given in the *Durchmusterung*, as well as the adopted magnitudes based on these from estimates, are shown in the following table:—

No. in D.M.	Mag. in D.M.	Magnitude adopted.
40°, 158	7·5	7·25
39, 167	7·1	7·46
39, 166	8·5	8·69
41, 149	9·1	8·91
40, 145	9·0	9·02

The resulting magnitude of *Nova* with the different powers, 9 being the finder of telescope, and the other figures the approximate powers used on a $4\frac{1}{4}$-inch refractor, is as follows:—

* The Stonyhurst Magnetograms do not show any trace of this solar disturbance.

Power used.	1885 Sept. 3 $10\frac{1}{2}^h$.	Sept. 5 $10\frac{1}{2}^h$.	Sept. 9 11^h.	Sept. 16 11^h.	Sept. 24 11^h.	Oct. 1. 11^h.
9		7·5				
2-in. refractor	7·5					
38			7·9	8·4	9·0	
76		8·3			9·2	9·0
143			8·7			9·4

The star had so far declined in brightness as to be described as *very faint* with powers 76 and 143 on October 27; *quite faint* with power 76 on November 4.

II. Brightness of Nebula.

Estimates of the total light of the nebula itself were made, the comparison stars used being σ, ν, θ and ρ *Andromedæ*, whose magnitudes are modified from those of the *Harvard Photometry* according to their average positions in the sequences observed, thus:—

	H.P.	Adopted.
σ Andromedæ	4·65	4·50
ν ,,	4·42	4·57
θ ,,	4·30	4·82
ρ ,,	5·27	5·27

	Mag. of Nebula.
1885, Sept. 3	4·81
9	4·84
Oct. 1	4·91
1887, Oct. 21	4·70
Nov. 14	5·01
15	4·73
Dec. 4	4·81

The discordances of the results are no larger than might be expected, the comparison of a large area of light, like the nebula, with the stars not being very easy. These observations, therefore, do not show any appreciable increase of the brightness of the nebula arising from the presence of the new star, compared with its present light; the stellar nucleus from its faintness was, indeed, not likely to add perceptibly to the total light.

III. The Spectrum.

I made the following notes on the spectrum of the new star:—

1885, *September* 16.—Its spectrum is partly continuous, but there is certainly interrupted light as well, which must be either

bright lines or short bright spaces between broad absorption bands; I believe the former. There are certainly two bright spots (lines appear as spots with the apparatus used), one probably in the green, much plainer than the other, which is half-way from it to the red end. I strongly suspect a third at an equal distance on the other side of the brightest. The general appearance of the whole spectrum of star and nebula is very much like that of an ordinary comet.

November 5.—There can be no doubt the spectrum of the new star is highly interrupted, and I have little doubt it contains more than one definite bright line. The brightest is about at the brightest part of the spectrum of the nebula, which is continuous as far as I can see, though there may be brighter bands in its centre, but this suspected appearance may only be caused by the star's spectrum.

1886, *February* 1.—I think the spectrum of the nucleus of the nebula is not simply continuous, but has two or three or more bright bands on it; this may, however, be only imagination.

1887, *December* 7.—The spectrum of the nebula is certainly mainly continuous, though I suspect a bright line in the brightest part as well as other very slight irregularities, but I cannot be sure of any of them.

December 10.—With a low power the spectrum mostly appears quite continuous, though I sometimes have a faint suspicion of a very feeble line or lines.

All the above observations were made with a Browning miniature spectroscope on a $4\frac{1}{4}$-inch refractor by Cooke; the following was made without any telescope, merely using one or two prisms of dense flint glass, both with and without spectacles in addition:—

1887, *December* 9.—The spectrum seems perfectly continuous, without the slightest sign of any lines, a great contrast to that of the Great Nebula in *Orion* which, viewed in this manner, consists of two conspicuous bright lines.

Sunderland: 1887, *December* 22.

The Chief Meteor Showers. By W. F. Denning.

I have derived from my observations during the last fifteen years the following mean places for the radiants of the leading showers. The positions are corrected for precession, and brought up to 1890:—